



# The Northwest Fisheries Science Center

The Northwest Fisheries Science Center studies living marine resources (e.g., salmon, groundfish, and killer whales) and their habitats in the Northeast Pacific Ocean—primarily off the coasts of Washington and Oregon and in freshwater rivers and streams in Washington, Oregon, Idaho, and Montana.

The Center seeks to better understand living marine resources and their ecosystems to assist resource managers in making sound decisions that build sustainable fisheries, recover endangered and threatened species, and sustain healthy coasts. The Center's headquarters in Seattle, WA and its five research stations in Washington and Oregon are home to more than 300 scientists and staff. Center scientists and staff conduct research in 5 primary areas:

## Status of Stocks

Stock assessments monitor the state or health of a fish stock. Center scientists conduct and coordinate stock assessments for West Coast groundfish and salmon stocks in the Pacific Northwest by taking a variety of measurements (e.g., data from fishing vessel catch or landings, scientific surveys, observers stationed on fishing vessels, and life history studies), analyzing the data, and using mathematical models to draw conclusions from the results. Stock assessments provide the basis for identifying overfished and threatened stocks, guiding and monitoring rebuilding of overfished stocks, and forecasting biologically sustainable harvest levels for healthy stocks.



Scientists sampling fish catch

## Human Caused Stress/Risks

Humans affect the environment around them and as a result living marine resources in the Pacific Northwest face a number of risks from toxic chemicals in sediments to hydropower systems to physically degraded habitats. Each different life stage (e.g., egg, juvenile, or adult) and species is affected differently. Center scientists are conducting research to better

understand how salmon, marine fish, and marine mammals react to these stresses and to quantify, assess, and minimize these risks. The Center's research provides the underpinning for national, state, and tribal management decisions (including how to minimize the impacts of hydropower systems on salmon, what habitats to restore, and when to close and open a fishery after an oil spill).



Scientists evaluating salmon abundance & distribution

## Ecosystem & Climate Characteristics

Living marine resources in the Pacific Northwest use a variety of ecosystems from freshwater streams and rivers to estuaries and the ocean. Our knowledge of these systems, as they apply to marine fish, salmon, and marine mammals, is currently very limited. Center scientists are conducting research on physical and biological processes that influence aquatic, marine and estuarine ecosystems in the Pacific Northwest (including sediment delivery, upwelling and tidal processes, and nutrient inputs and cycles), as well as the effects of invasive species, toxic phytoplankton, climate change, and natural environmental fluctuations.

## Recover & Rebuild Species

Over the past several decades certain fish stocks have become depleted and in some cases are in danger of extinction. The Center studies genetic variation and conducts research on the population structure of salmon, marine fish, and killer whales. The Center also develops innovative recovery tools like captive breeding (or broodstock) programs to propagate salmon species, new techniques for rearing hatchery fish, and culture techniques to rear marine fish in captivity. In addition, Center scientists are directly involved in salmon recovery planning efforts on the West Coast.



Modified hatchery raceways

## Innovation & Technology

Innovations can lead to new or better ways to conduct research and understand species and their habitats. Center scientists are taking a lead role in developing and applying technologies, techniques, and tools to support conservation and recovery of the Pacific Northwest's living marine resources. For example, Center scientists are developing technologies that better monitor salmon movement and are successfully using acoustic (sonar-based) technologies to measure groundfish abundance and map fish distribution.

*Sharing our work with other scientists, with policy makers, and with the public is important to us. To learn more about what we do, please visit our website at [www.nwfsc.noaa.gov](http://www.nwfsc.noaa.gov) or call us at 206-860-3200.*